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10/593,770	09/22/2006	Masahiro Tojo	0216-0525PUS1	9089
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EXAMINER				
COUGHLIN, MATTHEW P				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/593,770

Applicant(s)

TOJO ET AL.

Examiner

Matthew P. Coughlin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claims 1-5 and 7 are pending in the application. Claims 1-5 and 7 are rejected.

Response to Amendment and Arguments

Applicant's argument with respect to the rejection of claims 1-7 as being indefinite under 35 USC 112 2nd paragraph have been found persuasive. This rejection has been withdrawn. Claim 6 has been cancelled. Therefore, the rejection of claim 6 under 35 USC 102(b) as being anticipated by Gomberg et al. (JACS, 1925, 47, 198-211) has been withdrawn. Claim 7 has been amended to be drawn to a process claim rather than a product claim. Therefore, the rejection of claim 7 under 35 USC 102(b) as being anticipated by Miyamoto et al. (US 20030166826) and the remaining references cited in the office action dated July 21st, 2009 has been withdrawn.

Applicant explains the novelty of the instant invention on pages 12-15 of the response filed October 21st, 2009 in that "the present inventors have unexpectedly found that a specific aromatic carbonate ether is contained in an aromatic carbonate produced by a conventional transesterification process". MPEP 2145 states that:

"The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious." Ex parte Obiaya, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985)

Therefore, the discovery of Applicant's highly pure and highly reactive aromatic carbonate upon a distillation to purify said product is unpatentable if the prior sufficiently teaches said distillation and the expected result from said distillation. The applied references used by the examiner teach the steps of the instantly claimed process with the exception of a distillation

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to remove the instant aromatic carbonate ether; however, Fukuoka et al. (U.S. Patent No. 5,210,628) generally teach that an aromatic carbonate produced by Applicant's method component (I) (see claim 1) may contain various impurities (See column 18, lines 49-57, reproduced below with emphasis added):

An aromatic carbonated which is the desired product produced by the method of the present invention is continuously withdrawn form as a high boiling point product in a liquid form from the lower portion of the continuous multi-stage distillation column. In this instance, the withdrawn liquid material may be either an aromatic carbonate alone and the starting material and/or reactant, and may contain a little amount of a low boiling product.

Fukuoka et al. do not teach an explicit procedure to remove said low boiling product nor the identity of said impurity, but teach that (column 24, lines 60-68, emphasis added):

In the process of the present invention, the high boiling point reaction mixture containing the desired aromatic carbonate which is withdrawn from the lower portion of the continuous multi-stage distillation column, can be subjected to the conventional method for separation and purification, such as distillation, crystallization and the like, to thereby isolate the desired aromatic carbonate.

Therefore, Fukuoka et al. teach that the aromatic carbonate can be further purified by distillation. Accordingly, the instant method is taught generically within the Fukuoka reference. With respect to the rejection of claims 1-5 and 7 using U.S. Patent No. 6,262,210 by Tojo et al. in view of U.S. Patent No. 5,210,268 by Fukuoka et al., Tojo et al. teach the removal of high boiling impurities to yield aromatic carbonates having high purity. (See column 1, lines 54-56). Furthermore, Tojo et al. teach that the removal of impurities prevents discoloration of an ultimate aromatic polycarbonate (column 6, lines 53-56). This is the same result that Applicant has found and has pointed to in the quotation cited on page 13. The reference by Tojo et al. is cited to demonstrate the expected benefit to be obtained when the purity of an aromatic carbonate is increased prior to generating a polymer. A

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person having ordinary skill in the art at the time the invention was made would be motivated to combine the teaching of Fukuoka et al. with the teaching of Tojo et al. to develop a process whereby lower boiling point impurities taught by Fukuoka et al. contained in the aromatic carbonate would be removed by distillation with a reasonable expectation that an aromatic carbonate with higher purity and better reactivity/properties would be obtained. Furthermore, the isolation of highly pure products is a general practice in synthetic chemistry. There is a strong motivation to isolate pure compounds that will be used in further manipulations since if the further manipulations perform poorly, the purity of the compounds used as starting materials can be easily eliminated as the culprit of a failed reaction. Tojo et al. teach this principle as it relates to the production of aromatic carbonates in that aromatic carbonates having high levels of purity perform better in the generation of polyaromatic carbonates. Accordingly, Fukuoka et al. and Tojo et al. together suggest the instant method and teach the result to be expected.

Arguments with respect to the rejection in view of Fukuoka et al., alone

Applicant correctly points out on page 17 of the remarks filed October 21st, 2009 that Fukuoka et al. do not teach the identity of the aromatic carbonate ether or the discoloration of an aromatic polycarbonate due explicitly to the ether. As stated above, while the exact identity of the instant impurity identified as an aromatic carbonate ether is not disclosed by the prior art, the prior art would still have reasonably lead a person having ordinary skill in the art at the time the invention was made to the instant invention since Fukuoka et al. teach: (1) that aromatic carbonates have various impurities when produced by the instant method and (2) that

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distillation can be used to remove said impurities. For these reasons, Applicant's arguments as stated on page 17 of the remarks filed October 21st, 2009 are not found persuasive.

Applicant further suggests on pages 18-19 of the remarks filed October 21st, 2009 that Fukuoka et al. do not teach the properties of the aromatic carbonate ether and therefore a person of skill in the art would not have been able to develop a purification procedure without this information. This argument is not found persuasive. A person having ordinary skill in the art at the time the invention was made would have recognized that compounds have particular boiling points. Furthermore, a distillation can be used to separate compounds based on their boiling points. In one instance, high boiling byproducts can be removed from the target compound by allowing the target compound to distill and isolating said target compound. In another instance, low boiling byproducts can be removed from the target compound by allowing the byproducts to distill away from the target compound. Fukuoka et al. teach the presence of both low and high boiling byproducts. Therefore, a person having ordinary skill would have been motivated to attempt each of the above instances, i.e. distilling the target compound from higher boiling byproducts and vice versa. There is nothing on the record to suggest that the identity of the aromatic carbonate ether is critical to understanding the nature of a distillation. A person having ordinary skill in the art would have been realized that a byproduct will either have a higher or lower boiling point than the target compound. Therefore, a person having ordinary skill would have been led to the instant method since a person having ordinary skill in the art would have reasonably expected that either or both of the distillation methods above would yield a more pure target compound.

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***Arguments with respect to the rejection in combined view of Tojo et al. and
Fukuoka et al.***

On pages 19-25 of the remarks filed October 21st, 2009, Applicant has argued that the combination of the applied references do not sufficiently teach the instant invention since Tojo et al. only teach the removal of high boiling products which are different from the instantly noted aromatic carbonate ether. Based on Applicant's arguments, it appears that the impurity discussed by Tojo et al. is not the same as the instant aromatic carbonate ether; however, Applicant states (emphasis added) "the aromatic carbonate ether (b) recited in claim 1 of the present application usually has a boiling lower than the aromatic carbonate produced." Therefore, it is not clear that the observed results taught by Tojo et al. are not actually a result of the removal of the instant aromatic carbonate ether when it possesses a boiling point higher than the aromatic carbonate produced. In either case, the combination of Fukuoka et al. and Tojo et al. teach the presence of low boiling products in the aromatic carbonate produced and the expectation that improved aromatic carbonate materials are obtained through purifications. Applicant further points out the experimental set-up of the prior art and notes that the set-up does not provide for a method to remove the instant purity and therefore (on page 24) "due to a lack of a procedure for the separation of the aromatic carbonate ether (b), the aromatic carbonate produced in Comparative Example 1 of the present application or the process of Tojo et al. has a larger content of the aromatic carbonate ether (b) than the aromatic carbonate produced by the process of the present invention." This is an undisputed fact, at least in Applicant's instant example where the aromatic carbonate ether has a lower boiling point than the aromatic carbonate, and is the reason why the instant rejection is a rejection under

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35 USC 103 and not 35 USC 102. The question with respect to patentability is whether a person having ordinary skill in the art would have been led to the instant invention based on the teachings of the prior art. As discussed above and below in the rejection, the Examiner has found that the prior art sufficiently suggests the instant method and the result to be obtained when performing the instant method despite the fact that the prior art fails to disclose the identity of the aromatic carbonate ether. Given the teachings of the prior art, a person having ordinary skill in the art at the time the invention was made would have been motivated to modify the experimental set-up of the prior art to enable removal of the instant low boiling products.

Applicant has traversed the obviousness-type double patenting rejection on the same grounds as the 103 rejection above; however, since Fukuoka et al. teach the method component (I) of claim 1 and teach the use of distillations to purify the obtained aromatic carbonates as discussed above and further in the rejection of claims 1-5 and 7 over U.S. Patent No. 5,210,268, the obviousness-type double patenting rejection is deemed proper and is maintained.

Maintained Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,210,268 by Fukuoka et al.

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Determining the scope and contents of the prior art. (See MPEP § 2141.01)

Fukuoka et al. teach a process for producing aromatic carbonates using the same starting materials and reagents as instantly claimed.

Ascertainment of the differences between the prior art and the claims. (See MPEP § 2141.02)

The three differences between the prior art and the claims are that:

(1) the prior art does not teach the identity of the impurity instantly noted as an aromatic carbonate ether,

(2) the prior art does not teach an explicit procedure for a distillation to remove said impurity, and

(3) the prior art does not teach an explicit procedure for the production of aromatic polycarbonate of claim 7.

Finding of prima facie obviousness --- rationale and motivation (See MPEP § 2141.02)

With respect to the difference that the prior art does not teach the identity of the impurity instantly noted as an aromatic carbonate ether, the fact that Applicant has identified an impurity present does not render the process novel or unobvious. This same impurity would have been present in the process reported by Fukuoka et al. given the similar procedure used. Therefore, the presence of the impurity instantly noted as an aromatic carbonate ether is implicit in the procedure taught by Fukuoka et al.

With respect to the different that the prior art does not teach an explicit procedure for a distillation to remove said impurity, Fukuoka et al. generally teach that an aromatic carbonate produced by Applicant's method component (I) (see claim 1) may contain various impurities (See column 18, lines 49-57, reproduced below with emphasis added):

An aromatic carbonated which is the desired product produced by the method of the present invention is continuously withdrawn form as a high boiling point product in a liquid form from the lower portion of the continuous multi-stage distillation column. In this instance, the withdrawn liquid material may be either an aromatic carbonate alone and the starting material and/or

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reactant, and may contain a little amount of a low boiling product.

Fukuoka et al. do not teach an explicit procedure to remove said low boiling product nor the identity of said impurity, but teach that (column 24, lines 60-68, emphasis added):

In the process of the present invention, the high boiling point reaction mixture containing the desired aromatic carbonate which is withdrawn from the lower portion of the continuous multi-stage distillation column, can be subjected to the conventional method for separation and purification, such as distillation, crystallization and the like, to thereby isolate the desired aromatic carbonate.

Therefore, Fukuoka et al. teach that the aromatic carbonate can be further purified by distillation.

With respect to the difference that the prior art does not teach a preparation for the aromatic polycarbonate instantly claimed, Fukuoka et al. teach that "an aromatic carbonate is useful as a raw material for the production of an aromatic polycarbonate." See column 1, background art. Therefore, a person having ordinary skill in the art at the time the invention was made would have been motivated to synthesize an aromatic polycarbonate via the procedure taught by Fukuoka et al. since the procedure avoids the use of the classic reagent phosgene, which is toxic.

Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,262,210 by Tojo et al. in view of U.S. Patent No. 5,210,268 by Fukuoka et al.

Determining the scope and contents of the prior art. (See MPEP § 2141.01)

Tojo et al. teach a process for producing aromatic carbonates using the same starting materials and reagents as instantly claimed and a process for the production of aromatic polycarbonates.

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Ascertainment of the differences between the prior art and the claims. (See MPEP § 2141.02)

The two differences between the prior art and the claims are that:

(1) the prior art does not teach the identity of the impurity instantly noted as an aromatic carbonate ether, and

(2) the prior teaches a final step for obtaining a high purity aromatic carbonate involving oxidizing by-products instead of distilling the aromatic carbonate as instantly claimed.

Finding of prima facie obviousness --- rationale and motivation (See MPEP § 2141.02)

With respect to the difference that the prior art does not teach the identity of the impurity instantly noted as an aromatic carbonate ether, the fact that Applicant has identified an impurity present does not render the process novel or unobvious. This same impurity would have been present in the process reported by Fukuoka et al. given the similar procedure used. Therefore, the presence of the impurity instantly noted as an aromatic carbonate ether is implicit in the procedure taught by Fukuoka et al.

With respect to the difference that the prior teaches a final step for obtaining a high purity aromatic carbonate involving oxidizing by-products instead of distilling the aromatic carbonate as instantly claimed, Fukuoka et al. teach (column 24) that the high boiling point reaction mixture may contain by-products and that these by-products could be removed by subjecting the mixture to the "conventional method for separation and purification, such as distillation, crystallization and the like, to thereby isolate the desired aromatic carbonate." Therefore a person having ordinary skill in the art at the time the invention was made would have recognized the final purification method instantly claimed as an obvious variant over the method taught by Tojo et al. A person having ordinary skill in the art at the time the invention was made would have reasonably expected that in order to obtain the high purity aromatic carbonates taught by Tojo et al., a distillation could be

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used as the final purification step. Furthermore, despite the fact that Tojo et al. may have removed a different impurity that the aromatic carbonate ether instantly noted, the instant method is still prima facie obvious in view of the combined references since Fukuoka et al. teach that the aromatic carbonate may contain impurities and that these impurities can be removed by distillation and Tojo et al. teach the result to be expected upon removal of impurities: that aromatic carbonates with high levels of purity and better reactivity can be obtained (See column 1, lines 54-56 and column 6, lines 53-56).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,210,268. Although the conflicting claims are not identical, they are not

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patentably distinct from each other. See rationale for 103 rejection cited supra in the instant office action.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew P. Coughlin whose telephone number is (571)270-1311. The examiner can normally be reached on Monday through Thursday from 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on 571-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew P. Coughlin/
Examiner, Art Unit 1626

/Rebecca L Anderson/
Primary Examiner, Art Unit 1626